



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/534,913

07/05/2005

Motoki Numata

2005_0725A

6927

513

7590

12/02/2008

WENDEROTH, LIND & PONACK, L.L.P.

2033 K STREET N. W.

SUITE 800

WASHINGTON, DC 20006-1021

EXAMINER

OH, TAYLOR V

ART UNIT

PAPER NUMBER

1625

MAIL DATE

DELIVERY MODE

12/02/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/534,913	Applicant(s) NUMATA ET AL.	
	Examiner Taylor Victor Oh	Art Unit 1625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/21/08 has been entered.

The Status of Claims

Claims 1-16 are pending.

Claims 1-16 are rejected.

DETAILED ACTION

1. Claims 1-16 are under consideration.

Priority

2. It is noted that this application is a 371 of PCT/JP03/14550 (11/14/2003), which has a foreign priority documents, JP 2002-330753 (11/14/2002) and JP 2002-330754 (11/14/2002).

Drawings

3. The drawing filed on 5/13/2005 is accepted by the examiner.

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

Art Unit: 1625

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Packer et al (U.S. 4,438,279) in view of O' Meadhra et al (US 6,689,903).

Packer et al teaches a process of producing terephthalic acid by oxidation of para xylene and the catalytic hydrogenation of the crude terephthalic acid in the following example (see col. 7 ,lines 1-48) :

EXAMPLE 1

A fluid oxidation effluent produced from the air oxidation of p-xylene in the presence of acetic acid having 5 weight percent water (95 weight percent acetic acid) containing 0.5 milligram atoms of cobalt, 1.5 milligram atoms of manganese and 2.8 milligram atoms of bromine are continuously charged into a stirred-tank type oxidation vessel closed except for inlets for continuous charging of said liquids, continuous charging and return of condensate of exhaust vapors and outlets for the reaction's exhaust (nitrogen, unused oxygen, water vapor, acetic acid vapor and oxides of carbon) containing about 3 volume percent oxygen and the overflow of oxidation effluent. The weight ratio of said acetic acid solution to p-xylene feeds is 3:1. The oxidation reaction is conducted at a gauge pressure of 28 kg/cm² and a temperature of 225° C. Such reaction conditions produce an oxidation effluent containing 32.5 weight percent total solids.

A 400-gram sample of said fluid oxidation effluent is taken, cooled to 100° C. and filtered. The resulting filter cake is washed with acetic acid (1:1 weight ratio), dried and analyzed for 4-CBA. The partially purified terephthalic acid, 130 grams, is found to contain 0.26 weight percent 4-CBA.

Art Unit: 1625

A second 400-gram sample of the oxidation effluent is taken and diluted with hot (225°C .) 890 grams of 95 percent acetic acid (5 percent water). The resulting mixture containing 10 weight percent total solids is charged to an autoclave fitted with a stirrer and charged with hydrogen to the gauge pressure of 7 kg/cm^2 . The diluted oxidation effluent is stirred and heated to the temperature of 285°C . and gauge pressure of 50 kg/cm^2 . The autoclave is also fitted with a mesh catalyst basket which can be raised above or lowered into the liquid contents. Before sealing the autoclave there is placed 5.5 grams of particulate catalyst comprising 0.5 weight percent metallic palladium dispersed on high surface per unit weight activated carbon support. The catalyst is lowered into the hot stirred liquid, and left therein for 100 minutes and then raised out of the liquid to separate catalyst therefrom. The contents of the autoclave are cooled to 25°C . The suspension at the temperature of 25°C . is filtered to collect the terephthalic acid precipitate which is then washed with fresh acetic acid (1:1 weight ratio) and dried.

The first vapors flashed while decompressing from the hydrogen free solution to the first crystallization pressure (e.g., from 38 kg/cm^2 to 25 kg/cm^2 gauge pressure) may, in addition to vapors of water and acetic acid, also contain vapors of p-toluic acid stripped from solution by the flashed vapors of water and acetic acid. Such hot pressurized mixture of vapors can better be used to heat either the oxidation effluent or a heat exchange fluid which can be used in a thermodynamic energy conversion (e.g., turbine) to provide mechanical energy for power generation or air compression. Thereafter, the cooled and further decompressed mixture can be used to provide direct heat to concentrate the mother liquor for its recycle to the oxidation as source of catalyst components and so that its oxidizable aromatic content (p-toluic acid and 4-CBA) can be with fresh p-xylene converted to additional terephthalic acid. (see col. 5 ,lines 17-33).

The instant invention, however, differs from the prior art in that the claimed internal energy possessed by the terephthalic acid cakes or liquid on it does not

Art Unit: 1625

specify its use for evaporating the liquid in the cake; the use of a screen bowl centrifuge or a rotary vacuum filter is unspecified.

O' Meadhra et al teaches a recovery process of producing pure terephthalic acid obtained by the hydrogenation of a solution of crude TPA (see col. 2 ,lines 42-44), which was produced by oxidation of p-xylene by conventional solid-liquid separation (see col. 4 ,lines 21-22), such as a centrifuge or rotary vacuum filter (see col. 5 ,lines 8-9).

Even so, the prior art does teach that "hot pressurized mixture of vapors can be used to heat either the oxidation effluent or a heat exchange fluid that can be used in a thermodynamic energy conversion." (see col. 5 ,lines 23-26). From this passage, it does imply that it seems reasonable to employ the internal energy for evaporating the liquid in the cake; this is within the purview of the skilled artisan in the art.

The Packer et al expressly discloses the followings (see col. 9 , lines 2-12):

The degassed solution separated from the catalyst is then cooled in four steps by flash evaporation of acetic acid at successively lower pressures to a final gauge pressure of 0.7 kg/cm².

The resulting suspension of precipitated terephthalic acid is charged to a centrifugal filter, the collected precipitate is washed with fresh 97 percent acetic acid and dried. In the foregoing manner fiber-grade terephthalic acid having less than 0.005 weight percent 4-CBA, less than 0.001 weight percent p-toluic acid and a b-color value below 1.0 can be obtained.

As shown in the above, there is a teaching about the solid-liquid separation step and the step of cleaning the crude terephthalic acid which are carried out using a

Art Unit: 1625

single common device. Similarly, O' Meadhra et al does teach the recovery process of producing pure terephthalic acid by the hydrogenation of a solution of crude TPA followed by oxidation of p-xylene by conventional solid-liquid separation, such as a centrifuge or rotary vacuum filter (see col. 5 ,lines 8-9).

Both processes are commonly involved in producing terephthalic acid using either the centrifuge or rotary vacuum filter as the equivalent conventional solid-liquid separation technique.

Therefore, it would have been obvious to the skilled artisan in the art to be motivated to employ the rotary vacuum filter of O' Meadhra et al to the Packer et al process as an alternative. This is because the skilled artisan in the art would expect or predict such a combination to be feasible and success as guidance shown in the prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Taylor Victor Oh whose telephone number is 571-272-0689. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Andres can be reached on 571-272-0867. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1625

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Taylor Victor Oh, MSD,LAC

Primary Examiner

Art Unit: 1625

/Taylor Victor Oh/

Primary Examiner, Art Unit 1625

11/26/08